Space Weather Forecast

Issued on Friday, 19 April 2024 at 01:54 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Further Moderate-flares likely and a slight chance of Strong-flares. Slight chance of /Minor Storm conditions day 2 (20 Apr) due to a fast wind from a coronal hole.

Solar Activity: Activity is currently Moderate. The largest flare was a Moderate flare at 18/0248 UTC from a small region amongst a cluster of sunspot groups in the southeast disc. There are thirteen sunspot regions currently visible on the disc, of which the largest is in the northeast quadrant. The most magnetically complex region lies within the cluster of sunspots located in the southeast of the disc, of which two other groups show moderate to complex magnetic structures. The remaining regions on the visible disc appear generally stable with only slight or no changes through the period.

Several coronal mass ejections have been observed from an area near AR3638 over the past 24 hours. Most of these of the CME's have been analysed, with weak glancing blows possible on 21 or 22 Apr. However, confidence is low regarding this. The most recent CME is yet to be analysed and has the potential for an Earth directed component.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of very minor CME influence late in the period. Solar winds were mostly slow-ambient, but briefly reached slightly elevated levels. The strength of the solar winds magnetic field was initially moderate, but then quickly dropped to weak levels. The important north-south component, was predominantly positive, and only occasionally fluctuated to become weakly negative. Resultant geomagnetic activity remained Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast with isolated Moderate-class flares expected and a slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: A CME that left the Sun on 15 Apr was expected to give a glancing impact at Earth, and may have arrived as a very weak features late on the 18th. Further CMEs associated with streams of plasma originating from a relatively small sunspot region in the southeast may give some weak transient features towards the end of the forecast period, although confidence is low. Solar winds are currently at normal background speeds. A recurrent coronal hole high-speed stream is expected to become geoeffective on day 3 (20 Apr) likely increasing speeds to slightly elevated or elevated levels, continuing into day 4 (21 Apr), before gradually waning.

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Geomagnetic activity is expected to be mostly Quiet to Unsettled. Activity may increase to occasional reach Active to Minor Storm levels tomorrow (20 Apr) due to the arrival of an enhanced solar wind from a coronal hold feature, and also possibly at times during days 3 and 4 (21st and 22nd) due to a chance of glancing blows from CME's.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no Solar Radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	75	75
Very Active	R3 to R5 X	No	15	15	15	15

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Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	10	10	15
Very Active	**≥ S3 ***	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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